

Claims

1. A data projector comprising:
 at least one micro display having an image to be projected,
 5 at least one source unit comprising at least one light source chip,
 each source unit being designed to preserve etendue, to minimize photon loss,
 to provide a desired projection shape and a uniform illumination onto the
 micro display,
 and at least one beam forming component,
 10 each beam forming component comprising at least one diffractive element,
 and a focusing optical unit for projecting the image of the micro display on a target.
2. The data projector of claim 1, wherein the data projector comprises at least one
 green LED, at least one blue LED and at least one red LED as light sources.
3. The data projector of claim 1, wherein the data projector comprises an LCD,
 15 LCoS, DMD, MLA LCD, MLA LCoS display or the like as the micro display.
4. The data projector of claim 1, wherein the data projector further comprises an
 optical unit between the beam forming component and the micro display for
 directing the optical radiation more efficiently, the optical unit being a lens, a
 mirror, a fresnel lens, a diffractive element, a micro lens array, x-cube or other
 20 optical component or a series of these or any combination thereof.
5. The data projector of claim 1, wherein the data projector further comprises an
 optical unit between the micro display and the focusing unit for directing the optical
 radiation more efficiently, the optical unit being a lens, a mirror, a fresnel lens, a
 diffractive element, a micro lens array, x-cube or other optical component or a
 25 series of these or any combination thereof.
6. The data projector of claim 1, wherein the data projector further comprises:
 means for dividing the beam of light from each light source into two beams with
 different polarizations, the micro display being divided into separate parts or using
 two separate micro displays to which each beam of the two beams of each light
 30 source is directed.
7. The data projector of claim 6, wherein the data projector further comprises
 means for combining the two beams of light of each light source after the micro
 display.

8. The data projector of claim 1, wherein the refractive index of the transparent material in each beam forming component is equal or close to equal to the refractive indexes of the corresponding source chip.
9. The data projector of claim 1, wherein each beam forming component is
5 integrated with a corresponding light source chip.
10. The data projector of claim 1, wherein the image is a video image.
11. The data projector of claim 1, wherein the data projector is a part of a portable electronic device.
- 10 12. The data projector of claim 6, wherein the two different polarizations are projected with separate images which form a stereo pair and viewed with polarization glasses to enable 3D effect.
13. The data projector of claim 1, wherein the target is a virtual plane.
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14. The data projector of claim 1 in the following uses: television, computer monitor, video projector, slide presenter / slide projector, virtual display projector.
15. The data projector of claim 1 as an accessory to or integrated into: a mobile
20 phone, a DVD- or other media player, a video camcorder, a digital camera, a Personal Digital Assistant, a Laptop PC, a handheld or desktop gaming device, a video conferencing device, a head mounted display, a multimedia device at home, hotels, restaurants, cars, airplanes, ships and other vehicles; multimedia devices at offices, public buildings and other locations; military displays.